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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/912,812

07/25/2001

Heather Noel Bean

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07/28/2005

HEWLETT PACKARD COMPANY
P O BOX 272400, 3404 E. HARMONY ROAD
INTELLECTUAL PROPERTY ADMINISTRATION
FORT COLLINS, CO 80527-2400

EXAMINER

WHIPKEY, JASON T

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 07/28/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/912,812

Applicant(s)

BEAN ET AL.

Examiner

Jason T. Whipkey

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims /

- 4) ☒ Claim(s) 1-7 and 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 and 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed January 19, 2005, have been fully considered but they are not persuasive.

Applicant has amended claim 1 in addition to submitting arguments. A revised rejection of claim 1 follows.

Regarding the arguments, Applicant asserts that "DeWolff is not directed to an image capturing device," and "DeWolff does not capture images" (see page 6, paragraphs 1-2, of the arguments). This is incorrect, since Figure 1 shows that images are not only captured by CCD camera 28, but they are displayed on video monitor 36.

Applicant also asserts that "the 'exposure information' mentioned in Malloy-Desormeaux refers to image composition information, and not light exposure times. Consequently, such revision suggestions do not correspond to exposure thresholds as that term is used in the present application" (page 6, paragraph 2). However, Malloy-Desormeaux (see column 35, line 62, through column 36, line 45), DeWolff (see page 13, lines 18-24), and the instant application (see page 7, paragraph 3, through page 8, paragraph 8) all describe shuttering images to capture an image with a satisfactory exposure level.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 2, and 5-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeWolff (PCT Application Number PCT/US91/09252) in view of Malloy-Desormeaux (U.S. Patent No. 6,577,821) and Sayag (U.S. Patent No. 5,585,847).

Regarding **claim 1**, DeWolff discloses:

an image sensor (CCD camera 28; see Figure 1) including a plurality of pixel elements (CCD image sensors inherently have more than one pixel element);

a lens (38) for focusing light from a scene onto said image sensor;

an electronically actuatable shutter device (LCD pad 13; see Figure 1 and page 8, line 26, through page 9, line 5) including a plurality of individually addressable and actuatable shutter elements (see page 8, line 29), with a shutter element of said plurality of individually addressable shutter elements substantially corresponding to at least one of said plurality of pixel elements (as stated on page 8, line 34, through page 9, line 5, the use of the highest resolution LCD possible is preferred; as stated on page 9, lines 27-31, the LCD alters the amount of light captured by CCD camera and displayed on video monitor 36);

a memory storing one or more exposure patterns (included in computer 32; see page 13, lines 18-26);

a processor (computer 32; see Figure 1) communicating with said image sensor, with said shutter device, and with said memory, said processor controlling said plurality of shutter elements according to an exposure pattern stored in said memory (page 13, lines 24-34), whereby different shutter elements of said shutter device may be light transmissive for different lengths of time (page 14, lines 4-10).

DeWolff is silent with regard to storing an exposure threshold in the memory.

Malloy-Desormeaux discloses the camera shown in Figure 4. The camera stores lookup tables containing over- and under-exposure thresholds used for the evaluation of the exposure of a captured image.

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An advantage of storing exposure thresholds is that they can be used to determine whether a captured image will be usable (see column 36, lines 35-45). For this reason, it would have been obvious at the time of invention to have DeWolff's system store exposure thresholds.

DeWolff is also silent with regard to positioning the shutter device between the lens and the image sensor.

Sayag discloses an imaging device, as shown in Figure 6. His system includes a lens in front of LCD shutter 67 and CCD imager 64, such that the shutter exposes pixel elements of the image sensor to focused light from the lens (see column 8, lines 60-65).

An advantage of placing a lens in front of an LCD shutter is that the relatively delicate shutter may be protected by the lens. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have DeWolff's system include a lens in front of the shutter.

Regarding **claim 2**, DeWolff discloses:

said shutter device comprises a liquid crystal display shutter element (LCD 13; see Figure 1) comprising a two-dimensional array of individually addressable and actuatable shutter elements (page 8, lines 26-30).

Regarding **claim 5**, DeWolff teaches that the image may be captured by photosensitive medium 20 (page 7, line 16). However, DeWolff is silent with regard to specifically using film.

Official Notice is taken that film is a photosensitive medium. Since DeWolff does not disclose a single, specific photosensitive medium for use in his invention, it would have been obvious to use any photosensitive medium, such as film.

Regarding **claim 6**, DeWolff discloses:

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said image sensor comprises an electronic image sensor (CCD camera 28; see Figure 1).

Regarding **claim 7**, DeWolff discloses:

said exposure pattern comprises two or more pixel unit exposure durations (LCD pixels have varying exposure periods; see page 14, lines 4-10).

5. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeWolff in view of Malloy-Desormeaux and Sayag and further in view of Lanzillotta (U.S. Patent No. 5,781,333).

Claim 3 may be treated like claim 1. However, DeWolff is silent with regard to using a two-dimensional array of microelectromechanical shutter elements.

Lanzillotta discloses:

said shutter device comprises a microelectromechanical shutter element (Figure 3 shows an array of light shutters 15 for controlling light transmission; see column 5, lines 11-20) comprising a two-dimensional array of individually addressable and actuatable shutter elements (each shutter is selectively opened and closed; see abstract, lines 2-4).

As stated in column 1, lines 28-30, and column 3, lines 44-46, an advantage of using such a shutter array instead of an LCD to control light transmission is that LCDs have relatively low speeds. For this reason, it would have been obvious at the time of invention to have DeWolff's system use the shutter system disclosed by Lanzillotta.

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6. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over DeWolff in view of Malloy-Desormeaux and Sayag and further in view of Shibuya (U.S. Patent No. 5,986,705).

Claim 4 may be treated like claim 1. However, DeWolff is silent with regard to storing a predetermined image exposure period that controls an overall exposure duration of an image capture.

Shibuya discloses exposure control system 305 (Figure 3) for an electronic camera that stores a minimum exposure time in memory 304 and uses the stored time to determine an appropriate exposure time (see column 7, lines 9-21).

An advantage of storing a minimum exposure time in a memory is that the camera will not select an exposure time shorter than that required by the operating specifications of the image sensor, and, as described in column 7, lines 35-41, the brightness of the image may be controlled in other ways. For this reason, it would have been obvious at the time of invention to have DeWolff's system store a minimum exposure time allowable by the image sensor.

7. Claims 21, 22, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant (U.S. Patent No. 5,030,985) in view of Cornuejols (U.S. Patent No. 5,193,016).

Regarding **claim 21**, Bryant discloses an imaging module (see Figure 2) for an imaging capturing device, comprising:

- an image sensor (CCD 29) including a plurality of pixel elements (see Figure 2); and
- an electronically actuatable shutter device (X-Y addressable shutter 19) positioned adjacent to said image sensor (see Figure 2), including a plurality of

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individually addressable and actuatable shutter elements (see column 3, lines 8-14), with a shutter element of said plurality of individually addressable shutter elements substantially corresponding to at least one of said plurality of pixel elements (see column 3, lines 35-40).

Bryant is silent with regard to exposing individual pixels to light for different amounts of time.

Cornuejols discloses an imaging device, wherein:

a shutter device (a liquid crystal shutter 6 is used in the camera; see column 6, lines 12-18) selectively exposes said image sensor (electronic image pick-up 40; see column 10, lines 49-66) to light from a scene to be imaged for different amounts of time on an individual pixel level (see column 9, lines 64-66).

As stated in column 9, lines 51-63, an advantage of exposing individual pixels to light for different amounts of time is that individual pixels be as sensitive as necessary, depending on the composition of a particular subject. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Bryant's camera control pixel-level exposure times.

Regarding **claim 22**, Bryant is silent with regard to using an LCD shutter. Cornuejols discloses:

said shutter device comprises a liquid crystal display shutter element (see column 6, lines 12-18) comprising a two-dimensional array of individually addressable and actuatable shutter elements (see column 9, lines 59-66).

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An advantage of using a liquid-crystal shutter is that they are reliable, as they have no moving parts. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Bryant's imaging device include an LCD shutter.

Regarding **claim 24**, Bryant discloses:

said image sensor comprises an electronic image sensor (CCD 29; see column 3, line 28).

8. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant in view of Cornuejols and further in view of Lanzillotta.

Claim 23 may be treated like claim 21. However, Bryant is silent with regard to using a two-dimensional array of microelectromechanical shutter elements.

Lanzillotta discloses:

said shutter device comprises a microelectromechanical shutter element (Figure 3 shows an array of light shutters 15 for controlling light transmission; see column 5, lines 11-20) comprising a two-dimensional array of individually addressable and actuatable shutter elements (each shutter is selectively opened and closed; see abstract, lines 2-4).

As stated in column 1, lines 28-30, and column 3, lines 44-46, an advantage of using such a shutter array instead of an LCD to control light transmission is that LCDs have relatively low speeds. For this reason, it would have been obvious at the time of invention to have Bryant's system use the shutter system disclosed by Lanzillotta.

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9. Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant in view of Cornuejols and further in view of DeWolff.

Claim 25 may be treated like claim 21. However, Bryant is silent with regard to exposing the image sensor in accordance with an exposure pattern with two or more pixel unit exposure durations.

DeWolff discloses an image sensing device, wherein:

a shutter device (LCD pad 13; see Figure 1 and page 8, line 26, through page 9, line 5) selectively exposes said image sensor in accordance with an exposure pattern (stored in computer 32; see page 13, lines 18-26) having two or more pixel unit exposure durations (LCD pixels have varying exposure periods; see page 14, lines 4-10).

An advantage of applying exposure patterns with varying exposure durations is that a user is provided more flexibility in producing an image — by applying the shapes described on page 13, lines 24-26, for example — which includes adjusting the contrast of specific areas of the image. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Bryant's imaging device apply exposure patterns and different exposure durations.

Conclusion

10. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (571) 272-7321. The examiner can normally be reached Monday through Friday from 9:00 A.M. to 5:30 P.M. eastern daylight time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thai Tran, can be reached at (571) 272-7382. The fax phone number for the organization where this application is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JTW

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July 21, 2005


THAI TRAN
PRIMARY EXAMINER